

REMARKS

Applicants respectfully traverse and request reconsideration.

Claims 1, 9-10, 12, 14 and 17-19 have been amended. The amendments to at least claims 10 and 12 are believed to be as to form or to otherwise correct typographical errors. Because these amendments were not required due to an Office Action rejection and because they are made as to form, Applicants respectfully believe that the aforementioned amendments do not relate to patentability. Applicants further submit that the amendments to claims 1, 9-10, 12, 14 and 17-19 have support in the originally filed specification and therefore do not add new subject matter.

Claims 1, 3, 9-10, and 12-13 stand rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. The Office Action states that “the claims merely recite the manipulation of measured data and do not produce a tangible result.” (Office Action, page 2). While Applicants respectfully disagree, claims 1 and 9 have been amended to include inherent language. Specifically, claim 1 expressly states that at least one display signal is captured from the video graphics circuitry and subsequently converted into at least one data acquisition signal prior to being provided to a test system (e.g., a display diagnostic test system) that tests the at least one display signal by taking time interval measurements, as claimed. Claim 9 is similarly amended to state that the at least one display signal is captured from the computer under test prior to being converted into at least one data acquisition signal having a pixel clock signal and subsequently provided to a test system.

According to the Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility as published in MPEP § 2106, “to be statutory, a claimed computer-related process must either: (A) result in a physical transformation outside the computer for which a practical application in the technological arts is either disclosed in the specification or

would have been known to a skilled artisan ... or (B) be limited to a practical application within the technological arts” “A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result; i.e., the method recites a step or act of producing something that is concrete, tangible and useful.” *Id.*, paraphrasing *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1358 (Fed. Cir. 1999). In a predominately cited case, the Federal Circuit held that “the transmission of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces ‘a useful, concrete and tangible result’ – a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades.” MPEP § 2106, citing *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998).

In claim 1 of the instant application, at least one display signal from the video graphics circuitry is captured and converted into at least one data acquisition signal having a pixel clock signal prior to being provided to a test system that tests the at least one data acquisition signal, wherein at least one time interval measurement is based on the pixel clock signal. Applicants respectfully submit that the provision of the at least one data acquisition signal (which originates from the video graphics circuitry) from the video graphics circuitry to a test system that tests the at least one data acquisition as claimed is more than a mere abstract idea, a law of nature or a natural phenomenon. Like the statutory, momentarily fixed final share price provided for recording purposes in *State Street*, the claimed provision of the at least one data acquisition signal (which originates from the video graphics circuitry) to the test system that tests the at least one data acquisition signal is also statutory for at least the reason that it is limited to a practical

application within the technological arts: e.g., providing one set of display signals (in a converted form) to a test system separate and distinct from the video graphics circuitry for testing. As articulated in Applicants' written description, the "generation and compilation of display testing information [without] retesting of the display signal using a measuring instrument, such as an oscilloscope [as previously required in the prior art]" (Applicants' written description, ¶ 0041) is a practical application within a recognized technological art.

For at least this reasons, claims 1 and 9 comply with the statutory requirements articulated by both the Federal Circuit and the MPEP. As a result, the 35 U.S.C. § 101 rejections with respect to claims 1 and 9 should be withdrawn. Because claims 3, 10, 12-13 depend upon claims 1 and 9, respectively, the 35 U.S.C. § 101 rejections pertaining to these claims should be also be withdrawn for the same or similar reasons as stated above.

Claims 1, 3-4, 7-16, and 19-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,740,352 to Philipp et al. ("Philipp") in view of U.S. Patent No. 7,009,604 to Chan et al. ("Chan"). As to independent claims 1, 9, 14 and 19, the rejections are improper as they: (1) fail to teach or suggest all claim limitations; (2) rely on nonanalogous prior art in Chan as the subject matter disclosed in Chan does not appear to be relevant to the particular problem with which the instant Applicants were involved; and (3) fail to provide a proper suggestion or motivation to combine the references. Each reason stated above and further articulated below is sufficient to defeat the Office Action's rejection.

1. The rejections fail to teach or suggest all claim limitations

The Office Action states that the claimed feature of taking time interval measurements based on a pixel clock signal of the data acquisition signal is found in Chan on column 9, line 26 and in claim 23. Assuming, *arguendo*, that Chan stands for such a proposition, no combination

of the alleged prior art teaches or suggests all claim limitations as required to support a *prima facie* case of obviousness. Applicants respectfully submit that both Applicants' claimed invention and Chan must be read in their entirety and otherwise considered as a whole. MPEP 2141(II). With respect to claim 1, the at least one display signal is captured from the video graphics circuitry, converted into at least one data acquisition signal and provided to a test system that tests the at least one display signal. Applicants respectfully note that the express language of the claim requires the video graphics circuitry to be separate and distinct from the test system. To interpret the claim otherwise would remove any meaning associated with the phrase "providing the at least one data acquisition signal [as converted after capture from the video graphics circuitry] to a test system that tests the at least one display signal". Applicants kindly remind the Examiner that each and every limitation must be considered and given proper meaning consistent with the claim and with the written description. *See e.g.*, MPEP § 2111. Because the combination of Chan and Philipp would result in the testing of the at least one display signal in the video graphics circuitry that produces the display signals (e.g., the video graphics system of Chan) and not in a separate and distinct test system, the rejection must be withdrawn.

Applicants respectfully support this contention by noting that Chan appears to indicate that the frame detector (cited by the Office Action as allegedly teaching the claimed testing of the at least one display signal "by taking time interval measurements of the at least one data acquisition signal, wherein at least one time interval measurement is based on the pixel clock signal") is a part of a graphics system (e.g., 112 of Chan's Fig. 2 of the computer system architecture of Chan's Fig. 2) that originally produced the display system and is not used to test any captured display signals that are provided to any kind of a test system. Applicants draw the

Examiner's attention to at least FIGs. 1-2 and 4-5 of Chan which clearly show the computer of FIG. 1 having an architecture as illustrated in FIG. 2 where the Video Output Unit 124 portion of the graphics system 112 (e.g., video graphics circuitry) contains the cited frame detector 10. Moreover, Chan further describes the location of the cited frame detector in at least Col. 7, l. 50 – Col. 8, l. 54 as existing within the graphics system that produces the display signal. Chan appears silent as to the suggestion of a frame detector located external to the graphics system.

Assuming, solely for purposes of argument that Chan teaches that which is cited by the Office Action and because Chan appears to only teach a frame detector located within a graphics system (e.g., within video graphics circuitry) that produced the display signals, the only combination of Chan and Philipp would result in taking time interval measurements of the at least one data acquisition signal in video graphics circuitry of the device under test (see e.g., element 100 of Philipp's Fig. 1) and not in a test system as claimed by Applicants. Because Applicants expressly claim testing by the test system separate and distinct from the video graphics circuitry, the Office Action has failed to teach each and every limitation of claim 1. For at least this reason, claim 1 is in proper condition for allowance.

Applicants respectfully submit that similar language may be found in claims 9, 14 and 19 which requires the test system to be separate and distinct from the device which provides the display signals. Accordingly, Applicants respectfully submit that claims 9, 14 and 19 are also allowable over the cited prior art.

Applicants further point out that the Office Action fails once again to address express claim language as previously identified in the response filed on April 26, 2006. Applicants respectfully note that in the April 26, 2006 response, Applicants clearly stated that “the Action ignores explicit claim language directed to (1) ‘converting the display signal into at least one

data acquisition signal having a pixel clock signal’ as presented in” previously presented claim 1. (Emphasis in original clearly illustrating that at least this aspect of the claim was ignored by the Office Action and not found by Applicants in the cited prior art). Claims 1 and 9 have been amended to clarify that the display signal converted is the previously claimed captured “at least one display signal.” Because the Office Action again fails to address specific and express claim language, and because no combination of Philipp and Chan teaches or suggests each and every limitation of Applicants’ claim 1, Applicants submit that the *prima facie* case of obviousness has not been met. Withdrawal of the instant rejection is requested. Claims 9, 14 and 19 contain the same or similar limitations as discussed above with respect to claim 1. For at least the reasons articulated above, claims 9, 14 and 19 are also believed to be allowable over the cited prior art.

Also, Chan appears to be directed to a frame detector within a graphics processing system prior to outputting of any display signal that is captured. Multiple embodiments are described. However, what appears to be common to each non-training mode and non-frame(in) mode embodiment is measuring pulses in a composite synchronization signal (CSYNC) using a pixel clock as a reference for the measurements and subsequently comparing the pulse measurements to known pulse patterns stored in the frame detector prior to any display signal being output. (Col. 2, l. 50 – Col. 3, l. 51; Col. 9, ll. 18-20; Fig. 5, Elements 14, 16, 18, 20). The pixel clock input to the frame detector is described by Chan as “a clock used to control the rate at which pixels are output from the video output unit 124” of graphics system 112 (Figs 2, 4). As also described, the CSYNC signal input to the frame detector is the composite synchronization signal for a master channel signal; the frame detector uses the CSYNC signal to detect frames of the master channel signal for synchronization with a slave channel signal. (Col. 8, ll. 31-36; Col. 2, ll. 31-49; Fig. 5). “The frame detector 10 is configured to receive a frame signal [in a training

mode or in a frame(in) mode] and/or a composite synchronization signal (CSYNC) [in a non-training mode and in a non-frame(in) mode] and to generate a frame signal in response. The generated frame signal may include a pulse that is asserted for one pixel clock cycle synchronous to the master display channel's frame event (as detected in the master display channel's frame signal [, frame(in),] or CSYNC signal)." (Col. 8, ll. 36-44; *see also* Col. 12, ll. 54-64). In other words, the output of frame detector 10, frame(out), indicates when the frame detector has detected a new frame of the master channel signal.

Chan simply teaches detecting frames of a master channel signal (using, in one set of embodiments, a pixel clock as a reference to measure pulses of the master channel signal's CSYNC) so that a graphics system can synchronize a slave channel signal to the master channel signal to output a display signal. Applicants' claimed invention involves the automated testing of display signals output from a graphics processing circuit by a test system separate and distinct from the video graphics circuitry that generates the display signals. (*See, e.g.*, claims 1, 9 and 14). The detection of frames in a master channel signal for the synchronization of a slave channel signal to the master channel signal by a graphics processing circuit is different from the automated testing of display signals output from such a system and then processed by a test system.

Moreover, one of the elements of a *prima facie* case of obviousness includes a suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. MPEP 2143. "There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." MPEP 2143.01(I) *citing In re Rouffet*, 149 F.3d 1350, 1357 (Fed. Cir. 1998).

“[I]t is necessary to ascertain whether or not the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the reference before him to make the proposed substitution, combination, or other modification.” MPEP 2143.01(I) *citing In re Linter*, 458 F.2d 1013, 1016 (CCPA 1972). Proper suggestions or motivations to combine the references include, among other things: (i) where the prior art suggests the desirability or making the combination when the references are taken as a whole; (ii) where the references have similar or the same backgrounds such that a combination of their teachings would allow one to arrive at the claimed invention in the “nature of the problem to be solved”; and (iii) where the knowledge of a skilled artisan is the motivation. MPEP 2143.01(I).

In the instant application, the Office Action states that “it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the invention of Philipp with the time interval measurement of Chan to allow the displayed image to be detected.” (Page 7, *citing Chan’s Abstract*). Combining Chan and Philipp as alleged would simply result in a system that uses graphics processing circuitry of Chan with a test system of Philipp, which would simply use a pixel clock in the graphics system to generate a standard display signal.

Chan teaches to use a pixel clock as a reference to determine synchronization to generate display signals within a graphics processing system and Philipp teaches a test system that does not employ pixel clock usage. Neither reference, alone or in combination, teaches using the pixel clock to test signals that have been produced by a graphics processing circuitry of the type, for example, disclosed in Chan. Chan deals with producing display signals whereas Philipp teaches testing signals but neither reference, alone or in combination, teaches using a pixel clock as claimed in the testing portion. Combining the teachings would simply result in a graphics processing system as described in Chan that produced a display signal that it was tested by the

system of Philipp which system of Philipp is admitted by the Patent Office does not utilize pixel clock information as claimed and there would be no motivation to modify Chan to become a completely different system other than the improper hindsight of Applicant's claimed invention.

Conclusion

For the aforementioned reasons, independent claims 1, 9, 14 and 19 are believed to be allowable over the cited prior art.

Dependent claims 3-4, 7-8, 10-13, 15-16 and 20 depend upon allowable, independent claims 1, 9, 14 and 19 and because the dependent claims further contain additional novel and non-obvious, patentable subject matter. For at least these reasons, the aforementioned claims are also in condition for allowance.

Applicants respectfully submit that the claims are in condition for allowance and respectfully request that a timely Notice of Allowance be issued in this case. The Examiner is invited to contact the below listed attorney if the Examiner believes that a telephone conference will advance the prosecution of this application.

Respectfully submitted,

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